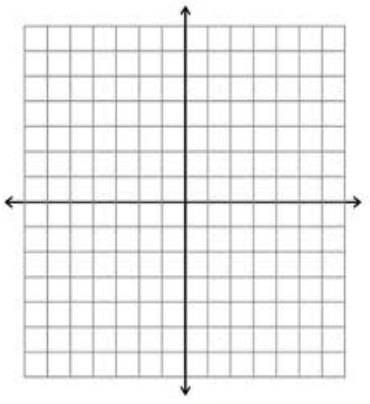
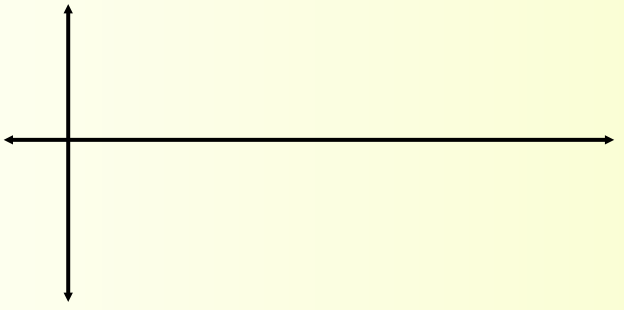
Alg. 2 Warm Up # 9-3

Graph. Label important features:

1. $y = \frac{1}{x+3} - 2$



2. $y = \sin\left(x - \frac{\pi}{4}\right) - 1$



HW Questions: Yellow WS

Alg 2 Homework
Solving Equations.
Solve by factoring.

Name _____ Team ____
Per. ____

1) $x^2 + 2x - 15 = 0$

2) $2x^2 + 7x + 3 = 0$

3) $4x^2 - 8x = 0$

4) $3x^2 + 7x + 2 = 0$

5) $2x^2 - 9x - 35 = 0$

6) $2x^2 - 11x + 5 = 0$

$a^2 - b^2$

$(a+b)(a-b)$

7) $x^2 - 49 = 0$

8) $4x^2 - 9 = 0$

$(2x+3)(2x-3) = 0$

$x = -\frac{3}{2}, \frac{3}{2}$

9) $3x^2 + 21x = 0$

Solve by completing the square. Answer exact and simplified.

10) $x^2 + 8x + 10 = 0$

11) $x^2 - 6x - 3 = 0$

12) $x^2 + 10x = 23$

13) $2x^2 + 12x + 3 = 1$

$-3 \quad -3$

$2(x^2 + 6x + 9) = -2 + 18$

$\frac{2(x+3)^2}{2} = \frac{16}{2}$

$(x+3)^2 = 8$

$x = -3 \pm 2\sqrt{2}$

14) $4x^2 - 8x - 21 = 0$

$4(x^2 - 2x + 1) = 21 + 4$

$\frac{4(x-1)^2}{4} = \frac{25}{4}$

$\sqrt{(x-1)^2} = \pm\sqrt{\frac{25}{4}}$

$x - 1 = \pm\frac{5}{2}$

$x = 1 \pm \frac{5}{2}$

Solve. Answer exact and simplified. Check for extraneous solutions.

15) $\left(\sqrt{2x+3}\right)^2 = (x)^2$

$2x + 3 = x^2$

$0 = x^2 - 2x - 3$

16) $\sqrt{-4x+17} + 5 = x + 2$

$-5 \quad -5$

$\left(\sqrt{-4x+17}\right)^2 = (x-3)^2$

$-4x + 17 = x^2 - 6x + 9$

17) $\frac{x}{3} = \frac{4}{x}$

$\sqrt{x^2} = \sqrt{12}$

$x = \pm\sqrt{4}\sqrt{3}$

$x = \pm 2\sqrt{3}$

18) $\frac{x}{x-1} = \frac{4}{x}$

$x^2 = 4(x-1)$

19) $\frac{3}{3}\frac{1}{x} + \frac{1}{3x} = 6$

$3x\left(\frac{1}{x} + \frac{1}{3x}\right) = 6(3x)$

$3 + 1 = 18x$

$\frac{3}{3x} + \frac{1}{3x} = 6$

$\frac{4}{3x} = \frac{6}{1}$

20) $4|x-7| - 3 = 25$

$x = 14, 0$

21) $-2 \leq 6x - 3 \leq 27$

$+3 \quad +3 \quad +3$

$\frac{1}{6} \leq \frac{6x}{6} \leq \frac{30}{6}$

$\frac{1}{6} \leq x \leq 5$

Use logs to solve. Round to nearest hundredth.

22) $3^x = 47$

23) $5^x - 10 = 2$

24) $6^x + 4 = 30$

$5^x = 12$

$\log 5^x = \log 12$

$x(\log 5) = \log 12$

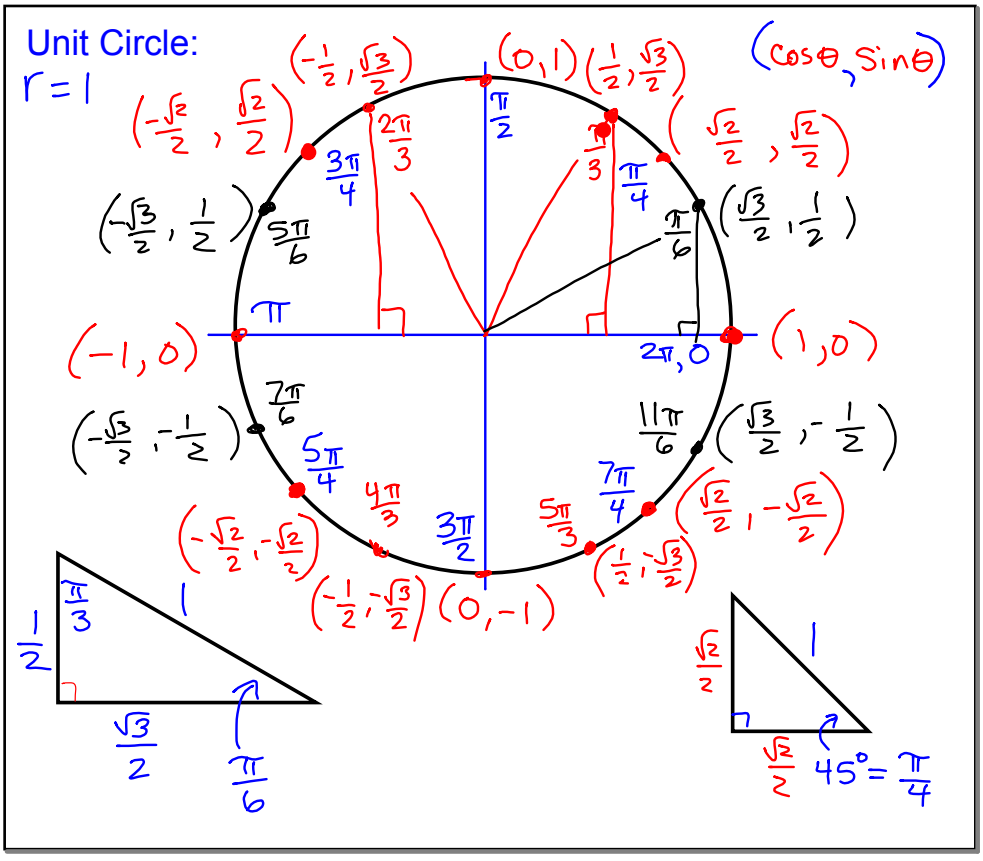
$\frac{x(\log 5)}{\log 5} = \frac{\log 12}{\log 5}$

$x \approx$

Today's Classwork

1) Another Unit Circle Practice

2) Solving a 3 variable system using Matrices on the graphing calculator



Solving a 3 variable equation with a grapher:

$$x + 7y - 6z = -12$$
$$-2x - 3y + z = -9$$
$$2x + 5y + 5z = 19$$

rref $\left[\begin{array}{ccc|c} 1 & 0 & 0 & \# \\ 0 & 1 & 0 & \# \\ 0 & 0 & 1 & \# \end{array}\right]$

Write as an augmented matrix:

$$\left[\begin{array}{ccc|c} 1 & 7 & -6 & -12 \\ -2 & -3 & 1 & -9 \\ 2 & 5 & 5 & 19 \end{array}\right]$$

order: 3 x 4

(3 rows by 4 columns)

* enter matrix in calculator

2nd MATRIX ➤ EDIT ENTER

* quit that screen
* choose rref from

2nd MATRIX ➤ MATH

* choose your matrix:

2nd MATRIX ➤ NAMES ENTER

Practice.

① $x - 9y + 4z = 1$

② $-4x + 18y - 8z = -6$

③ $2x + y - 4z = -3$

(2, 1, 2)

[redacted]

x y z answers

$$\begin{bmatrix} 1 & -9 & 4 & 1 \\ -4 & 18 & -8 & -6 \\ 2 & 1 & -4 & -3 \end{bmatrix} \xrightarrow{\text{rref}} \begin{bmatrix} 1 & 0 & 0 & x \\ 0 & 1 & 0 & y \\ 0 & 0 & 1 & z \end{bmatrix}$$

rows x # columns

3 x 4

Try another:

$$7x - 4y - z = -1$$
$$3x + 2y + 3z = 15$$
$$x - y + z = -5$$

[redacted]

(3, 6, -2)

Practice

$$x - 7y + 3z = -10$$
$$-3x + 14y - 6z = 19$$
$$2x + y - 3z = 1$$

$(1, 2, 1)$

$$\left[\begin{array}{ccc|c} 1 & -7 & 3 & -10 \\ -3 & 14 & -6 & 19 \\ 2 & 1 & -3 & 1 \end{array}\right] \xrightarrow{\text{rref}} \left[\begin{array}{ccc|c} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 1 \end{array}\right]$$

$y = ax^2 + bx + c$

$(-1, -15) \rightarrow$

$(2, -9) \rightarrow$

$(4, -35) \rightarrow$

$$\left[\begin{array}{ccc|c} 1 & -1 & 1 & -15 \\ 4 & 2 & 1 & -9 \\ 16 & 4 & 1 & -35 \end{array}\right]$$

$= -3x^2 + 5x - 7$

HW: WS (pink)

Equation Solve #2

Short quiz Friday:

Build a Unit Circle from Memory